

POPULATION STATUS OF WHITE-BACKED VULTURE *GYPES BENGALENSIS*
AND LONG-BILLED VULTURE *GYPES INDICUS* IN GUJARAT, INDIA

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A state-wide survey of the Critically Endangered White-backed Vulture *Gyps bengalensis* and Long-billed or Indian Vulture *Gyps indicus* in the 26 districts of Gujarat was undertaken from May 29–30, 2010. The survey was carried out throughout the state by hundreds of volunteers and personnel of the State Forest Department to determine the population of the two *Gyps* vulture species in all the districts and regions of the state, and to assess changes in their populations through comparison with the earlier surveys done in 2005 and 2007. Total count method was used, and the counts were made at resting, roosting, feeding, and nesting sites to assess the population size, number of young birds, and the nest-tree availability. The survey resulted in an estimated population of 793 White-backed Vulture (WBV) and 265 Long-billed Vulture (LBV); the identity of 7 individuals was uncertain. When compared with the earlier surveys, it revealed that there has been a 62.9% decrease (-1,342 individuals) in the population of WBV and 29.5% reduction (-111 individuals) in the population of LBV within a time span of 5 years.

Key words: Gujarat, *Gyps bengalensis*, *Gyps indicus*, White-backed Vulture, Long-billed Vulture, population, status

INTRODUCTION

The populations of three species of vultures, i.e., White-backed Vulture (WBV) *Gyps bengalensis*, Long-billed Vulture (LBV) *Gyps indicus*, and Slender-billed Vulture *Gyps tenuirostris*, have been reported to have declined catastrophically in India, Pakistan, and Nepal since the early 1990s (Prakash 1999; Prakash *et al.* 2003; Virani *et al.* 2001), prompting the IUCN to classify their status as Critically Endangered (BirdLife International 2000). The WBV, which often lives in close association with human habitation areas, was described as the commonest vulture during the 1970s to early/mid-1980s. Densities of 12 nests/sq. km were recorded at Keoladeo National Park, Rajasthan, India (Prakash 1999), and there were nearly 3 nests/sq. km in Delhi (Galushin 1971), where flocks of several thousand birds used to be seen at carcass dumping sites. Even in 1985, WBV was regarded as "possibly the most abundant large bird of prey in the world" (Houston 1985). Of the six species of vultures reported from Gujarat (Ali 1996), three are now recognised as *Gyps* species (Rasmussen and Parry 2001). Owing to the drastic decline in population of *Gyps* vultures, especially of WBV and LBV in Gujarat (and elsewhere in India), the Gujarat State Forest Department and GEER Foundation, with the support of various NGOs, nature clubs, ornithologists, and birdwatchers conducted state-wide vulture surveys in 2005, 2007, and 2010 to assess their population and distribution, and to monitor their possible further decline.

STUDY AREA

Gujarat is the westernmost state of the country, with a 1,600 km long coastline. Gujarat can be divided into five regions, namely Kachchh, Saurashtra, North Gujarat, Central Gujarat, and South Gujarat. The northwestern part of the state (i.e., Kachchh) is arid, with less than 500 mm average annual rainfall. Large areas of the state, encompassing Saurashtra (400 mm rainfall), North Gujarat (700 mm rainfall) and Central Gujarat (800 mm rainfall), have a semi-arid climate. The southern part of Gujarat, which is sub-humid to humid, receives comparatively high rainfall, averaging 2,000 mm per annum.

METHODOLOGY

The entire state consisting of 26 districts (Tapti district was formed after the 2007 Vulture Survey) was surveyed for WBV and LBV. As the survey was carried out state-wide, we took support from various NGOs, nature lovers, birdwatchers, and the Gujarat State Forest Department. Survey of such a widespread area also required a pre-survey planning workshop, which was held to decide the survey dates, methodology, data-sheet format, area distribution among the various district coordinators/key persons, team-building and networking. Moreover, to coordinate, orientate and educate the Forest Department staff and other participants (volunteers), a Satellite Communication (SATCOM) session

was conducted in which participants received guidance/suggestions about methodology, data-sheet use, identification of adult and immature vultures, timing of counts. The GEER Foundation prepared and distributed vulture identification brochures to the participants. The brochure contained colour illustrations and important information regarding identification of vultures. The surveys mainly focused on estimating the population of both the *Gyps* species through total count method. Emphasis was on counting vultures at key habitats or sites like 'panjrapols' (i.e., permanent cattle shelters), well-known roosting sites (including areas with palm trees), and well-known feeding sites (including backyards and dumping areas of 'panjrapol'). Counts of vultures in flight were usually avoided. Nesting of the vultures could not be surveyed as the nesting phase was over in the majority of study areas during the survey period (i.e., May 29–30, 2010). The data was recorded on a prescribed data-sheet on the species of vultures sighted number of adults, and immature individuals of each species; time and place of sighting (district, taluka, village/town), and where possible, the name of the locality, activity like feeding, flying, resting, roosting, habitat type, and other information, such as health status of the vultures and disturbances at sites.

RESULTS AND DISCUSSION

Population and Decline in Gujarat

The survey of vultures in 2010 in Gujarat recorded 793 WBV and 265 LBV, revealing a significant decline in especially WBV population when compared to the counts in 2005 (2,135 WBV and 376 LBV) and 2007 (1,147 WBV and 217LBV).

As the count of WBV was 2,135 individuals in 2005 and 793 individuals during the 2010 survey, it can be concluded

that there had been a 62.9% decrease in population (-1,342 birds) in a time-span of 5 years (Fig. 1, Table 1). The decrease in population was 30.9% to that counted in 2007 (i.e., 1,147 individuals), a time-span of 3 years. Overall, the decline in WBV population from 2005 to 2010 was at annual average rate of 12.6%. The decline was 23.1% /year between 2005 and 2007 and 10.3%/year between 2007 and 2010, suggesting a lower rate of decline in recent years.

The count for LBV was 376 individuals in 2005 and 265 individuals in 2010, suggesting a 29.5% decrease (-111 individuals) in the population over a time-span of 5 years (Fig. 1, Table1). Thus, the decline in population of LBV was much lower than that recorded for WBV (@ 62.9%). The counts also suggest that there has been a rise by 22.1% (i.e., from 217 individuals to 265 individuals) from 2007 to 2010.

Region- and district-wise Population

The survey in 2010 (and in the previous years) in the various regions and districts revealed that in any district, vulture population were usually concentrated in a few areas and localities. The fact that the vultures were not uniformly distributed may be detrimental to their survival, as any habitat-linked factor, epidemic, or other problems in these restricted areas may lead to drastic population decline in the entire district or region.

North Gujarat Region

North Gujarat is largely semi-arid that includes Banaskantha, Gandhinagar, Mehsana, Sabarkantha, and Patan districts. WBV population had increased in North Gujarat region from 71 vultures in 2005 to 80 vultures in 2007 (12.7% increase); however, it declined to 32 individuals by 2010 (60% decline to 2007 population, and 54.9% decline to

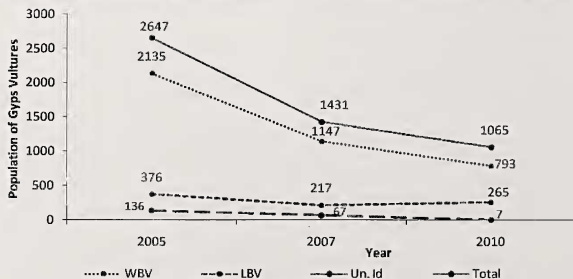


Fig. 1: *Gyps* vulture population trends in Gujarat (2005–2010)

Table 1: District-wise *Gyps* vulture population from 2005 to 2010

Sr. No.	District	Population in 2005			Population in 2007			Population in 2010		
		WBV	LBV	Un id. WBV/ LBV	WBV	LBV	Un id. WBV/ LBV	WBV	LBV	Un id. WBV/ LBV
1	Ahmedabad	254	0	0	279	0	0	224	0	0
2	Amreli	47	0	15	77	0	6	135	0	0
3	Anand	0	0	0	0	0	0	9	2	0
4	Banaskantha	8	0	46	11	0	0	0	3	0
5	Bharuch	42	0	0	0	0	0	0	0	0
6	Bhavnagar	145	3	0	26	1	0	27	0	0
7	Dahod	2	0	0	7	0	12	0	0	0
8	Dangs	8	0	0	0	43	0	0	58	0
9	Gandhinagar	0	0	0	0	0	0	2	0	0
10	Jamnagar	0	0	0	0	0	0	0	0	0
11	Junagadh	44	54	23	0	52	27	14	76	0
12	Kachchh	858	52	0	456	6	0	223	12	0
13	Kheda	0	0	0	0	0	0	0	0	0
14	Mehsana	44	0	0	60	0	0	30	0	0
15	Narmada	0	0	0	0	28	0	7	0	0
16	Navsari	0	0	0	0	0	0	0	0	0
17	Panchmahal	50	107	0	0	11	20	0	19	7
18	Patan	19	1	0	9	0	0	0	0	0
19	Porbandar	0	0	0	0	0	0	0	0	0
20	Rajkot	44	1	0	7	0	0	0	0	0
21	Sabarkantha	0	62	0	0	31	0	0	39	0
22	Surendranagar	272	14	52	80	0	2	6	0	0
23	Surat	273	35	0	135	0	0	94	5	0
24	Tapi	0	0	0	0	0	0	0	0	0
25	Vadodara	25	47	0	0	14	0	0	0	0
26	Valsad	0	0	0	0	31	0	22	51	0
Total	2,135	376	136	1,147	217	67	793	265	7	0

2005 population) – Fig. 2. The LBV population had reduced from 63 vultures to 31 vultures from 2005 to 2007 (50.8% decline), and from 63 vultures to 42 vultures from 2005 to 2010 (33.3% decline), however, there was a rise by 35.5% from 2007 to 2010 (Fig. 2).

Central Gujarat

Central Gujarat is semi-arid, with some hilly tracts in north-eastern districts. Central Gujarat includes six districts, namely Ahmedabad, Anand, Dahod, Panchmahal, Vadodara, and Kheda. WBV population had continuously decreased in Central Gujarat from 331 individuals in 2005 to 286 individuals in 2007 (13.6% decline) and further to 233 individuals in 2010 (29.6% decline to 2005 population and 18.5% decline to 2007 population) (Fig. 3).

LBV population had also decreased in Central Gujarat from 154 individuals in 2005 to 25 individuals in 2007 (83.8% decline) and further from 25 individuals in 2007 to 21 individuals in 2010 (16% decline). In a time-span of 5 years (2005 to 2010), the LBV population has declined by 86.4%.

South Gujarat

South Gujarat has a temperate climate with good rainfall, and is characterized by hilly semi-dry-deciduous to semi-evergreen forests. It has seven districts, namely Bharuch, Dangs, Narmada, Surat, Valsad, Tapi, and Navsari. The population of WBV declined from 323 individuals in 2005 to 135 individuals in 2007 (58.2% decline) and further to 123 individuals (8.89% decline) from 2007 to 2010. The overall

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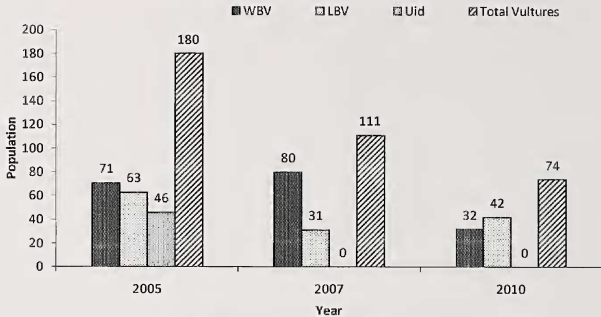


Fig. 2: Population of *Gyps* vultures in North Gujarat (2005–2010)

decline was 61.9% from 2005 to 2010). In contrast, the population of LBV increased from 102 individuals to 114 individuals from 2007 to 2010 (11.8 % increase), and from 35 to 114 individuals from 2005 to 2010 (225.7% population rise) (Fig. 4).

Saurashtra

Saurashtra is a semi-arid region with a long coastal boundary. The region is hilly in central Saurashtra, and has dry-deciduous forests in Gir Sanctuary. The region consists of seven districts, namely Bhavnagar, Amreli, Surendranagar, Junagadh, Porbandar, Rajkot, and Jamnagar. WBV population decreased from 552 individuals in 2005 to 190 individuals in 2007 (65.6 % decline) and further to 182 individuals in 2010

(67% decline to 2005 population and 4.2% decline to 2007 population) – Fig. 5. LBV population decreased from 72 individuals in 2005 to 53 individuals in 2007 (26.4% decline). However, it increased from 53 individuals in 2007 to 76 individuals in 2010 indicating a 43.4% population rise. Over a time-span of 5 years (2005 to 2010), the LBV population had increased by 5.6%.

Kachchh

Kachchh is among the largest districts of India and has an area of 45,652 sq. km. It is semi-arid to arid, and is characterised by a saline desert area known as the ‘Rann’. The region consists of one district, i.e., Kachchh. WBV population decreased from

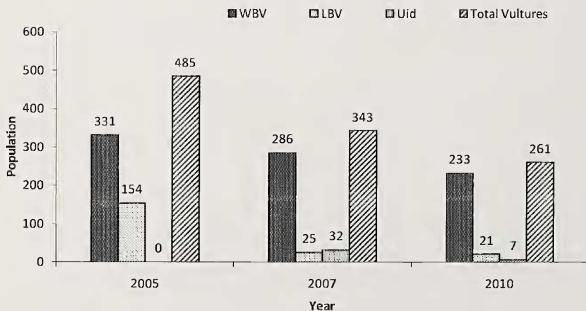


Fig. 3: Population of *Gyps* vultures in Central Gujarat (2005–2010)

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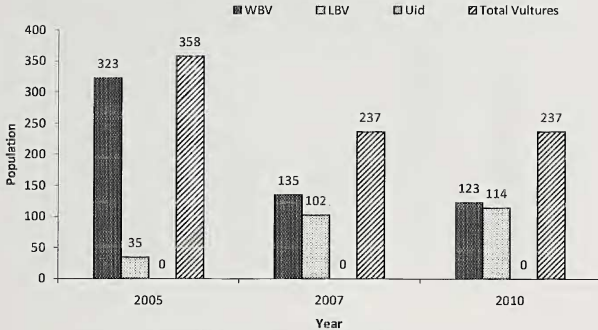


Fig. 4: Population of *Gyps* vultures in South Gujarat (2005–2010)

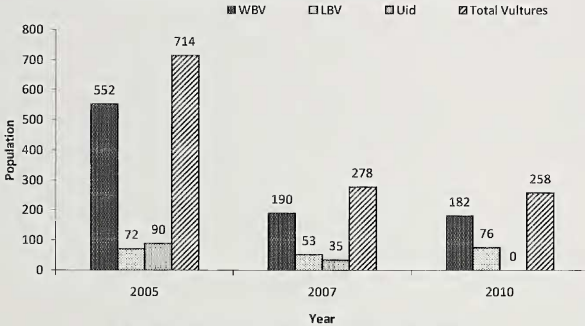


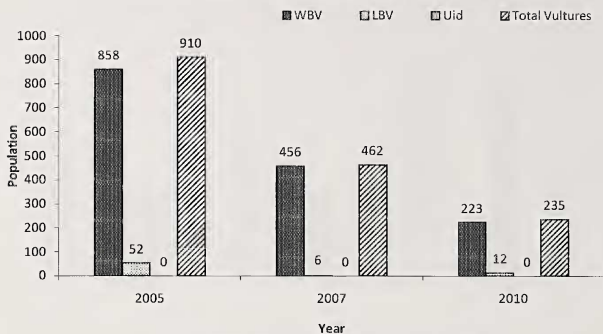
Fig. 5: Population of *Gyps* vultures in Saurashtra (2005–2010)

858 individuals in 2005 to 456 individuals in 2007 (46.8% decline) and further to 223 individuals in 2010 (74% decline to 2005 population and 51.1% decline to 2007 population) (Fig. 5). LBV population decreased from 52 individuals in 2005 to 6 individuals in 2007 (88.5% decline). However, it increased from 6 individuals in 2007 to 12 individuals in 2010 indicating a 100% population rise. Overall, the population increased by 76.9% from 2005 to 2010.

CONCLUSION

The findings of the three surveys carried out from 2005 to 2010 revealed that the vulture population of WBV and LBV are still on the decline in Gujarat, and the decline is

especially steep in the case of the WBV. The WBV has declined by 62.9% from 2005 to 2010 and the LBV by 29.5% for the same period – their populations in Gujarat were 793 and 265 respectively, as per the 2010 census. The findings also revealed that the decline has been less sharp from 2007 to 2010 than from 2005 to 2010, and in fact, there had been a slight increase in population of the LBV from 2007 to 2010. The likely reason for the sharper decline in the population of WBV than LBV is because the latter usually nests in hills on rocky cliff faces, and additionally, in forested areas in the districts of Dangs, Sabarkantha, and Panchmahal. The nesting locations, usually being away from human-dominated areas and away from predators, may possibly be subjected

POPULATION STATUS OF *GYP*S VULTURES IN GUJARATFig. 6: Population of *Gyps* vultures in Kachchh (2005–2010)

to little or no disturbance during nesting, ensuring greater nesting success and increase in populations. Their less dependence on trees (nests more on crags in the hills) as a nesting substrate may also be another reason for greater nesting success. In contrast, the WBV nests only in trees, and the loss of trees due to cutting or lopping and other disturbances and pressures in human-dominated landscape affect its nesting success.

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